1969

A Normative Study of the AAHPER Youth Fitness Test for Boys in Grades 7-10 in the State of South Dakota

Glenn L. Rasmussen

A NORMATIVE STUDY OF THE AAHPER YOUTH FITNESS TEST FOR BOYS IN GRADES 7-10 IN THE STATE OF SOUTH DAKOTA

BY

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A thesis submitted
in partial fulfillment of the requirements for the
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1969

A NORMATIVE STUDY OF THE AAHPER YOUTH FITNESS TEST FOR BOYS IN GRADES 7-10 IN THE STATE OF SOUTH DAKOTA

This thesis is approved as a creditable and independent investigation by the candidate for the degree, Master of Science, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Adviser Date

Head, Health, Physical Education and Recreation Department Date

ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation to Dr. Paul H. Brynteson for his helpful suggestions and guidance throughout this study; to Dr. W. Lee Tucker for his advice on statistical procedures; to Mr. Donald C. Lockwood for his help in calculation of scores; and to all of the teachers in South Dakota who administered the test.

GLR

A NORMATIVE STUDY OF THE AAHPER YOUTH FITNESS TEST FOR BOYS IN GRADES 7-10 IN THE STATE OF SOUTH DAKOTA

Abstract

GLENN L. RASMUSSEN

The purpose of this study was to establish norms for the AAHPER Youth Fitness Test for South Dakota boys in grades seven through ten and to compare their scores with those of national boys.

One school was selected to represent each region or section of the South Dakota High School Activities' Association. The number selected from each school was in proportion to the school's enrollment.

The AAHPER Youth Fitness Test was administered to one thousand South Dakota boys in grades seven through ten. Norms were established by computing every fifth percentile. The scores of South Dakota boys were compared with the scores of national boys using age only. The medians of South Dakota boys were then compared to the medians of the national boys on each test item.

It was found that the medians for South Dakota boys at all ages were higher than the medians for national boys on all items except the pull-up, the shuttle run, and the 50-yard dash.

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CHAPTER I

INTRODUCTION

I. THE PROBLEM

Statement of the problem. The purpose of this study was to establish the American Association for Health, Physical Education and Recreation Youth Fitness Test norms for South Dakota boys in grades seven through ten and to compare these norms with the American Association for Health, Physical Education and Recreation Youth Fitness Test norms.*

Significance of the study. During a Presidential message to the schools on physical fitness of American youth, President John F. Kennedy made the following statement: "The level of physical, mental, moral, and spiritual fitness of every American citizen must be our constant concern."[1]

Many physical educators share the opinion of President Kennedy that all pupils should be assured of at least a minimum amount of physical fitness as a result of a physical education program. Clarke writes that, in order to determine whether this objective is being met,

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*A similiar study was concurrently completed for girls; Judy G. Busch, "A Normative Study of the AAHPER Youth Fitness Test for Girls in Grades 7-10 in the State of South Dakota" (unpublished Master's thesis, South Dakota State University, Brookings, 1969), pp. 1-62.

[1]President's Council on Youth Fitness, "A Presidential Message to the Schools on Physical Fitness of Youth," Youth Physical Fitness (Washington: Government Printing Office, 1961), p. 3.

definite steps should be taken to obtain the physical fitness status of each pupil in school. Only through measuring the program and teacher efficiency are the physical educators able to effectively improve the program, which in turn improves the physical status of the individual.[2]

In 1965, Hunsicker conducted a study with the purpose of revising the American Association for Health, Physical Education and Recreation Youth Fitness Test norms which had been devised in 1957-58. In his 1965 study, Hunsicker did not use any South Dakota schools as a part of his sample. It was felt, therefore, that a similar study should be conducted where norms are established specifically for the state of South Dakota and that these norms be compared with the national norms. It was to this end that the present study was conducted.

II. LIMITATIONS

1. The American Association for Health, Physical Education and Recreation Youth Fitness Test was administered to only one thousand boys in grades seven through ten in South Dakota.
2. The investigator did not administer the fitness test to the subjects.
3. Due to varied teacher qualifications, the administration of the test items might have varied from school to school even though exact instructions were given to each teacher.

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[2] H. Harrison Clarke, Application of Measurement to Health and Physical Education (Englewood Cliffs: Prentice Hall, Inc., 1967), p. 54.

4. Inadequate facilities and lack of time might have altered test administration in some schools.

5. The test was administered on only one occasion in each school.

III. DEFINITION OF TERMS

AAHPER. The American Association for Health, Physical Education and Recreation.

AAHPER Youth Fitness Test. The AAHPER Youth Fitness Test is a battery of seven test items designed to give a measure of physical fitness for both boys and girls in grades five through twelve. The seven test items are pull-up (with flexed-arm hang for girls) for judging arm and shoulder girdle strength; sit-up for judging efficiency of abdominal and hip flexor muscles; shuttle run for judging speed and change of direction; standing broad jump for judging explosive muscle power of leg extensors; 50-yard dash for judging speed; softball throw for distance for judging skill and coordination; and 600-yard run-walk for judging cardiovascular efficiency.[3]

Norm. A norm is a standard to which an obtained score may be compared.[4]

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[3] American Association for Health, Physical Education and Recreation Youth Fitness Test Manual (revised edition, Department of the National Education Association, 1965), p. 7.

[4] Donald K. Mathews, Measurement in Physical Education (Philadelphia, London, Toronto: W. B. Saunders Company, 1968), p. 27.

IV. HYPOTHESIS

There is no difference in the physical fitness of South Dakota boys in grades seven through ten and that of other national boys of the same age.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Much has been written in regard to the physical fitness of American youth. However, only a review of the formulation of the AAHPER test and studies completed in the state of South Dakota are reported in this chapter.

Carl Troester, executive secretary of the AAHPER, states that most educators are convinced of the importance of physical fitness. He further states that this concern is not recent; generation after generation has been complaining about the poor fitness of its youth. "However," Troester states, "the present emphasis on fitness in peacetime is unusual."[5]

Kraus and Hirschland in reviewing World War II statistics found that during this period forty per cent of the young men that took medical physicals to enter the service were found unfit for military service. These statistics brought about a series of studies one of which was conducted by Kraus and Hirschland. They compared the physical fitness of American children with that of European children by using a test of minimum physical fitness. The results of the Kraus-Weber Test of Minimal Fitness were published in 1953, and showed that the average

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[5]American Association for Health, Physical Education and Recreation Youth Fitness Test Manual, Department of the National Education Association, 1961, p. iv.

American school child was lacking in minimal muscular requirements and that American children were physically unfit compared with European children.[6]

I. DEVELOPMENT OF THE AAHPER YOUTH FITNESS TEST[7]

As a result of Kraus's study, as well as other events, President Dwight D. Eisenhower in 1956, called a national conference to consider the fitness of American youth. It was from this conference that the AAHPER Youth Fitness Project began.

The project began in 1957 with a conference being called by the AAHPER. The purpose of the project was to establish a valid physical fitness test, which could be easily administered, and to establish national norms for the test. The items in the test were selected because they were reasonably familiar to most if not all physical educators, because they required little or no equipment, since they measured different components of fitness, and because they could be administered to both boys and girls in the entire age range of grades five through twelve with the one exception of the pull-up. The correlations among the seven test items were found to be low; therefore, all seven test items were selected to make up the AAHPER Youth Fitness Test.

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[6] Hans Kraus and Ruth P. Hirschland, "Muscular Fitness and Health," Journal of Health, Physical Education and Recreation, 24:17-19, December, 1953.

[7] Unless otherwise noted, the information referred to in this section comes from Paul A. Hunsicker and Guy G. Reiff, "A Survey and Comparison of Youth Fitness" (a Cooperative Research Project No. 2418, United States Office of Education, 1958-1965), pp. 1-174.

The seven items selected were pull-ups (modified pull-ups for girls) for measuring arm and shoulder girdle strength; sit-ups for measuring efficiency of abdominal and hip flexor muscles; shuttle run for measuring speed and change of direction; standing broad jump for measuring explosive muscle power of leg extensors; 50-yard dash for measuring speed; softball throw for distance for measuring skill and coordination; and 600-yard run-walk for measuring cardiovascular efficiency.

At the 1957 American Association for Health, Physical Education and Recreation conference, Hunsicker was appointed as director of the project to test the American youth on the newly developed AAHPER Test and to develop national norms for the fitness test.

A representative sampling was selected by the Survey Research Center of the University of Michigan. The sampling was based on home-room units in grades five through twelve so that both those taking physical education and those excused from it would be included. Drawing of the sample schools, making the initial contact requesting the school's cooperation, and deciding which students in cooperating schools would be subjects were all done by the Survey Research Center. Hunsicker distributed directions for administering the test and demonstrated the test items to the professional people in various sections of the country who assumed the responsibility for supervising the test administration in their areas.

Scores for 8,500 boys and girls in grades five through twelve were sent to the University of Michigan where they were transcribed on wordsheets and punched onto IBM cards. Percentile score tables were

determined for each of the tests, based both on age alone and on the Neilson-Cozens Classification Index. All data were collected and analyzed during the school year 1957-58.

In 1963, Hunsicker undertook a second national survey to bring the norms up to date to determine whether increased emphasis on physical fitness since 1958 had helped to increase the fitness levels of the American youth. The testing took place during the school years 1963-1965. The test items administered during the second survey were identical to those given in 1957-58 with one exception. The flexed-arm hang was substituted for the modified pull-up for girls because it gave a more efficient and reliable measure for the variable tested. The Survey Research Center at the University of Michigan again drew the sample of 9,200 boys and girls.

The new norms indicated that boys and girls, ages ten to seventeen, were more fit in 1964-65 as measured by the AAHPER Youth Fitness Test, than they were in 1957-58 when the norms were first established. The norms for all items were raised.

II. COMPARATIVE STUDIES UTILIZING THE AAHPER YOUTH FITNESS TEST

In 1962 Lilevjen and Schlekeway conducted a study utilizing the AAHPER Youth Fitness Test to compare the physical fitness of 314 male students of Watertown, South Dakota, Junior High School with national norms. The subjects were classified according to the Neilson-Cozens Classification Index. The testing was done by the junior high physical education instructors under the supervision of the authors. An initial test at the start of the school term and a final test at the end of the

school term were administered and the percentile ranks of all students on each of the seven items were averaged. The ranks were arranged in two frequency distributions and the means for the two tests were determined. By the use of the t test it was determined that there was a significant gain in physical fitness from the initial test to the final test.

On the initial test, according to test item average, all classifications fell well above the fiftieth percentile of the national norms in all test items with the exception of the 50-yard dash. On the final test, according to test item average, all classifications fell well above the fiftieth percentile of the national norms in all test items.[8]

Howlin conducted a study with the purpose of comparing the physical fitness of selected schools in Sioux Falls, South Dakota, with national fitness norms. Each school's test scores were compared with the other Sioux Falls schools to see which school had the highest scores. Then all of the physical test scores from all of the schools were compared as a whole with national norms. Charts were used to show the comparison with national norms. The girls fell below the national average in three events: the shuttle run, the broad jump, and the

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[8] Clar Lilevjen and Eugene Schlekeway, "The Effects of a Physical Education Program of 150 Minutes Per Week at Watertown, South Dakota, on Physical Fitness as Compared to the National Norms Established by the AAHPER Fitness Test" (unpublished Research Report, South Dakota State University, Brookings, 1962), pp. 1-43.

softball throw. The boys fell below the average in two events: the shuttle run and the broad jump.[9]

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[9]James Howlin, "Comparing Physical Fitness in Selected Areas in Sioux Falls, South Dakota, with the National Norms and La Port Score Card" (unpublished Master's thesis, South Dakota State University, Brookings, 1959), pp. 1-86.

CHAPTER III

METHODS AND PROCEDURES

I. SOURCE OF SUBJECTS

The AAHPER Youth Fitness Test was administered to one thousand boys in grades seven through ten in South Dakota. These one thousand students were selected by the stratified random-sampling technique. The following procedures were used:

1. In the state of South Dakota, all schools are classified as either an "A" or "B" school, depending upon the size of the school. The total enrollments of the Class "A" and Class "B" schools are approximately equal; therefore, 50 per cent of the sample was randomly selected from either class.
2. The schools are also divided into thirty-two regions in the Class "B" schools and eight sections in the Class "A" schools. One school was selected to represent each Class "B" region and one to represent each Class "A" section by the pulling-out-of-the-hat technique.
3. The number of subjects tested from each selected school depended upon the size of the enrollment in that particular region or section to be represented proportionately.

Appendix A illustrates the breakdown of the sample into the Class "A" and the Class "B" schools and a further breakdown into regions and sections and the number of subjects from each.

Appendix B lists the schools which participated in the study.

II. PROCEDURE FOR COLLECTING THE DATA

A preliminary letter was sent to the principal of each selected school introducing the study and asking for their cooperation. A cover letter was written by Richard Nankivel, specialist of Health, Physical Education and Recreation for the State Department of Public Instruction. Copies of the cooperative letters of Busch and this investigator appear in Appendix C.

As soon as a positive response was received indicating the school's willingness to cooperate in the study, an AAHPER Youth Fitness Test Manual, data recording cards, and an accompanying letter with directions was sent to the test administrator, whom the principal had designated in the response letter. This designated person was generally the physical education teacher for the school. A copy of the data recording card and set of instructions appear in Appendix D.

Each test administrator was asked to return the data sheets as soon as possible. Approximately three weeks after each tester received the final instructions, test manual, and data sheets, a reminder was sent to speed up the return of the information (Appendix E).

Three weeks later, person to person telephone calls were made to every test administrator who had not as yet returned the data sheets.

Any incomplete data sheets were sent back to the tester for additional data.

If a negative response was received indicating a school's unwillingness to cooperate in the study, another school was randomly selected

from that area by the pulling-out-of-the-hat technique.

Initially all regions representing Class "B" schools and all sections representing Class "A" schools were represented in the study. After the long distance telephone calls were made to those schools that had not returned their results, two regions and one section were left unrepresented. Due to lack of time, no schools were selected to represent these three areas.

III. ADMINISTERING THE TEST

All test administrators were to follow the exact instructions which appear in the AAHPER Youth Fitness Test Manual. Instructions appear in Appendix F.

CHAPTER IV

ANALYSIS AND DISCUSSION OF DATA

The AAHPER Youth Fitness Test was administered to one thousand boys in grades seven through ten in the state of South Dakota. Appendix A represents the sample, which was selected proportionately to the school's enrollment. Because several schools did not send the specified number of boys and because two regions and one section were not represented at all in the study, the total number of subjects was two hundred short of the original sample specified in Appendix A. Appendix B lists the schools which participated in the study. Each school is listed under the region or section which it represents according to the South Dakota High School Activities' Association.

The South Dakota median scores on each test item were compared to the median scores of the national AAHPER norms. This was done according to age, but not according to the Nielson-Cozens Classification Index.

I. ORGANIZATION OF DATA

All scores were recorded on data processing sheets and then punched onto IBM cards to minimize error. The frequency distribution for every test item was found through the use of the IBM machines. Percentile scores were then computed and results were arranged in tabular form to establish norms for South Dakota.

II. ANALYSIS AND DISCUSSION OF RESULTS

Percentile scores for South Dakota appear on Tables I through XXIII in Appendix G. These norms are based on age (Tables I through VII) and the Nielson-Cozens Classification Index (Tables X through XVII). Tables VIII and IX show how each pupil's classification was determined.

The comparison of South Dakota norms to the national norms is shown according to age in Figures 1 through 7.

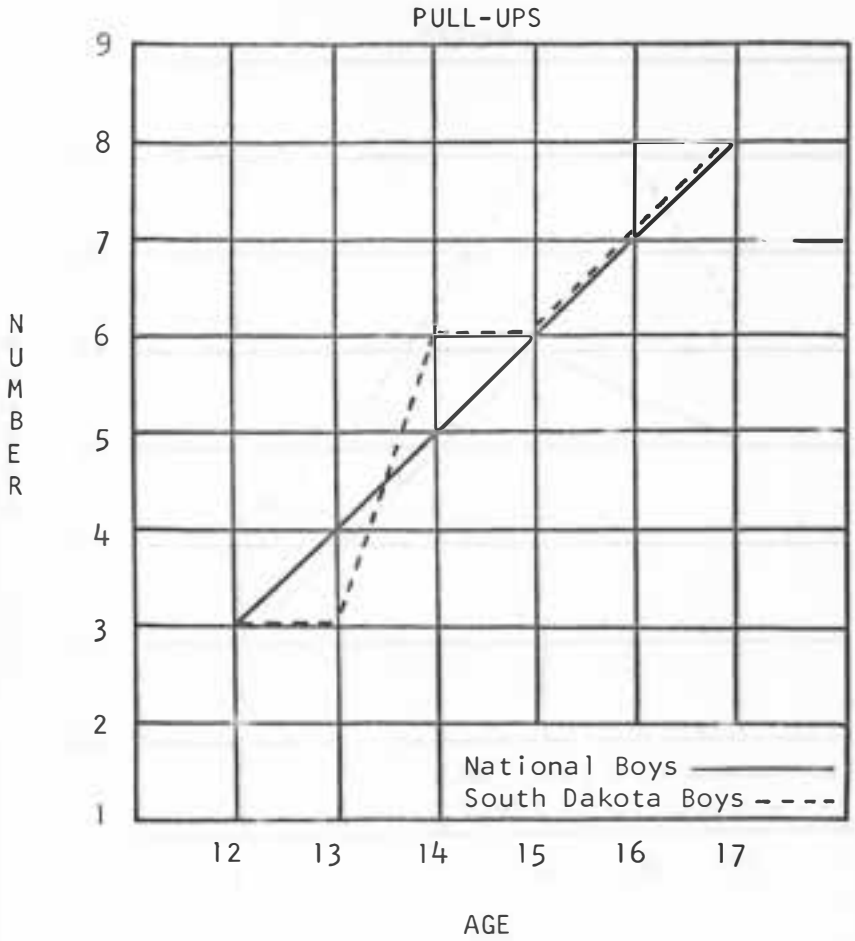

FIGURE 1

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, PULL-UPS

Figure 1 shows that the median scores for pull-ups for South Dakota boys closely parallels the national median scores in every age level with the exceptions of age thirteen, which is lower, and age fourteen, which is higher.

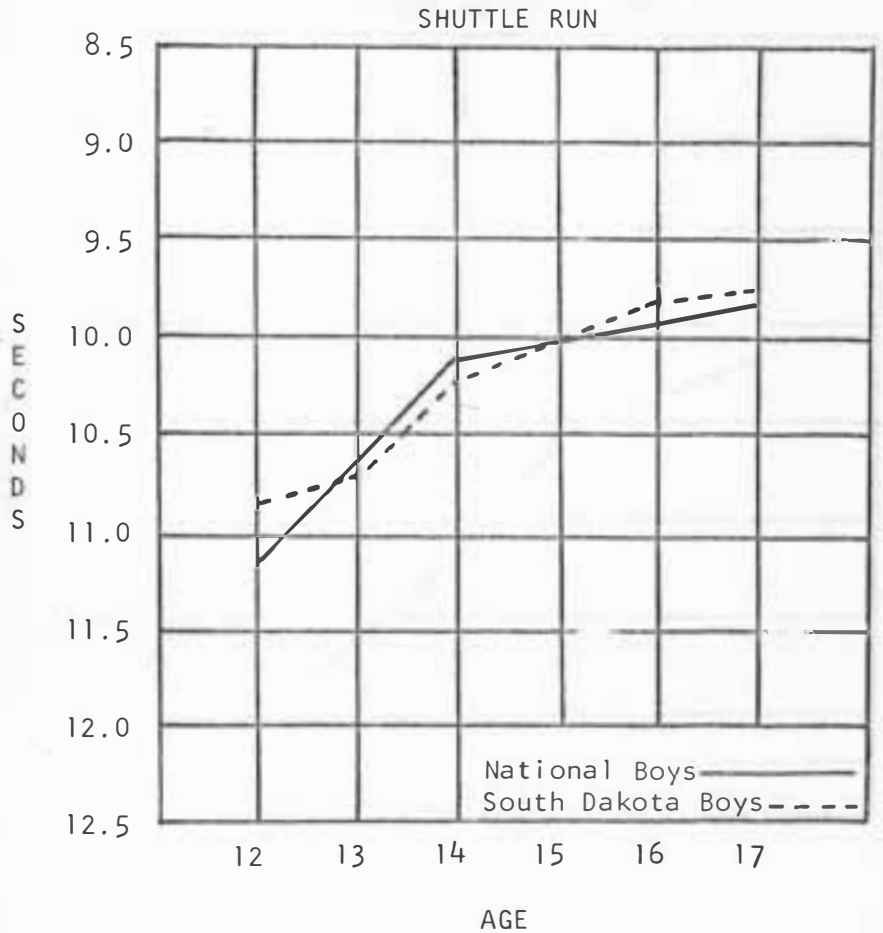

FIGURE 3

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, SHUTTLE RUN

Figure 3 shows that the medians for the shuttle run for South Dakota boys are about the same as the medians for the national norms.

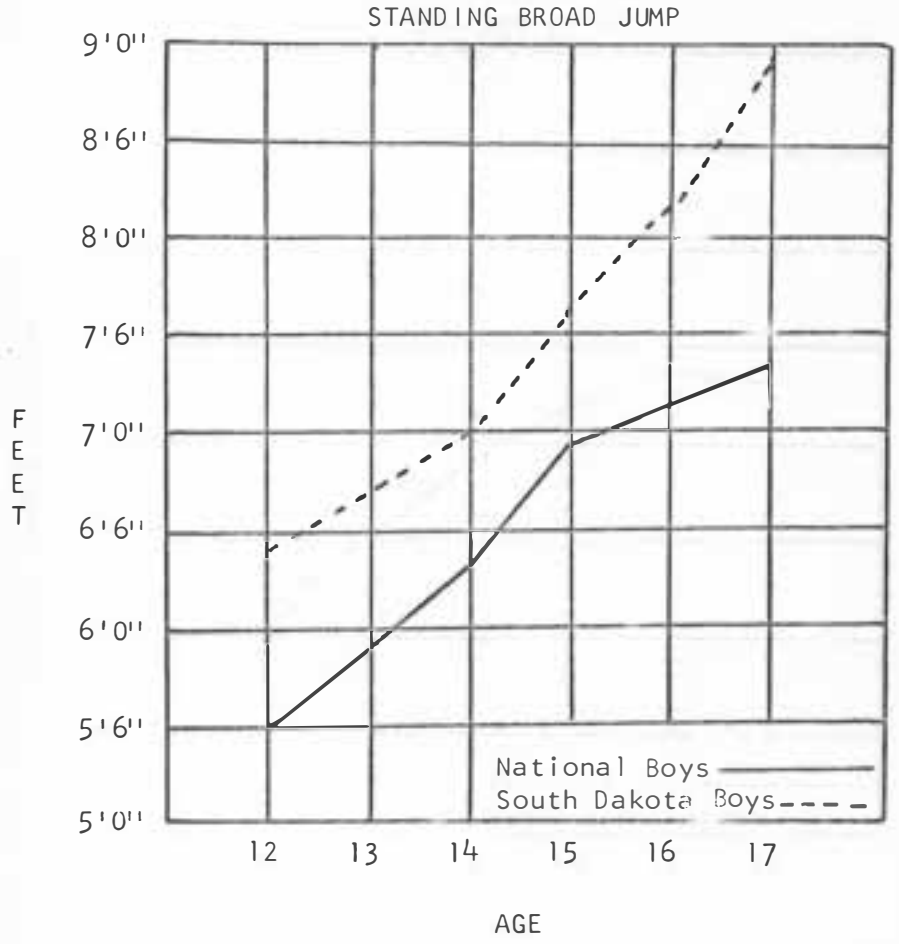

FIGURE 4

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, STANDING BROAD JUMP

Figure 4 shows that the medians in the standing broad jump for South Dakota boys is higher than the medians for national boys at every age level.

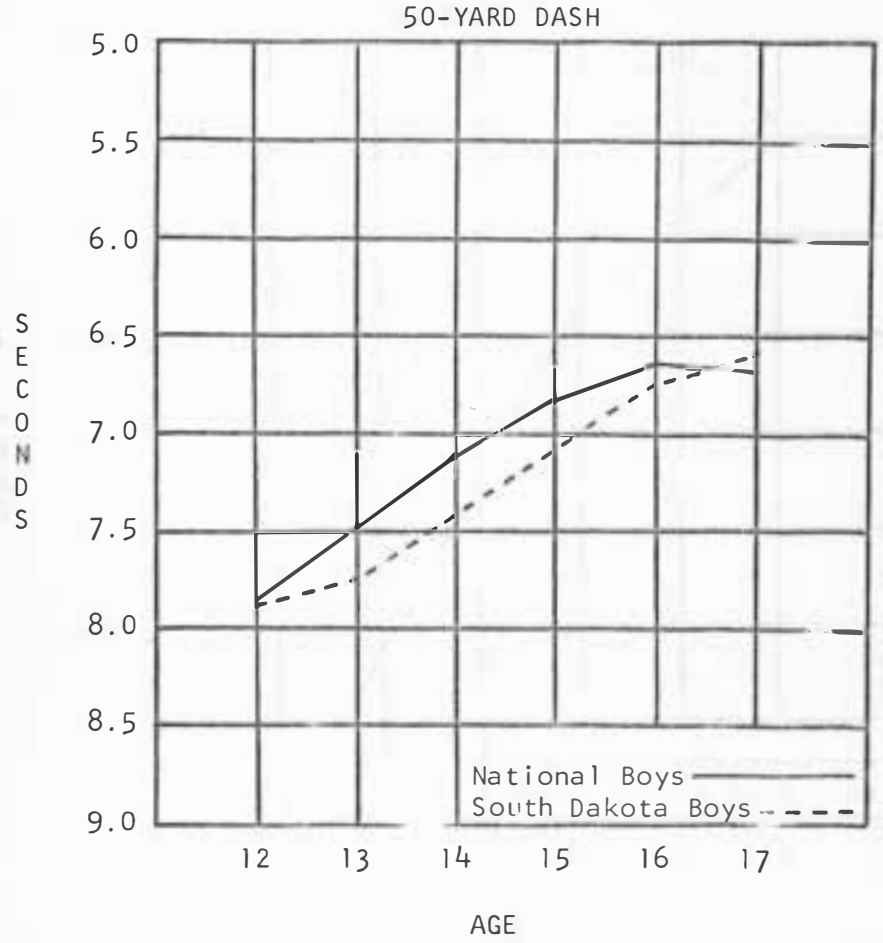

FIGURE 5

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, 50-YARD DASH

Figure 5 shows that the medians for the 50-yard dash for South Dakota boys are slightly lower than the medians for the nation.

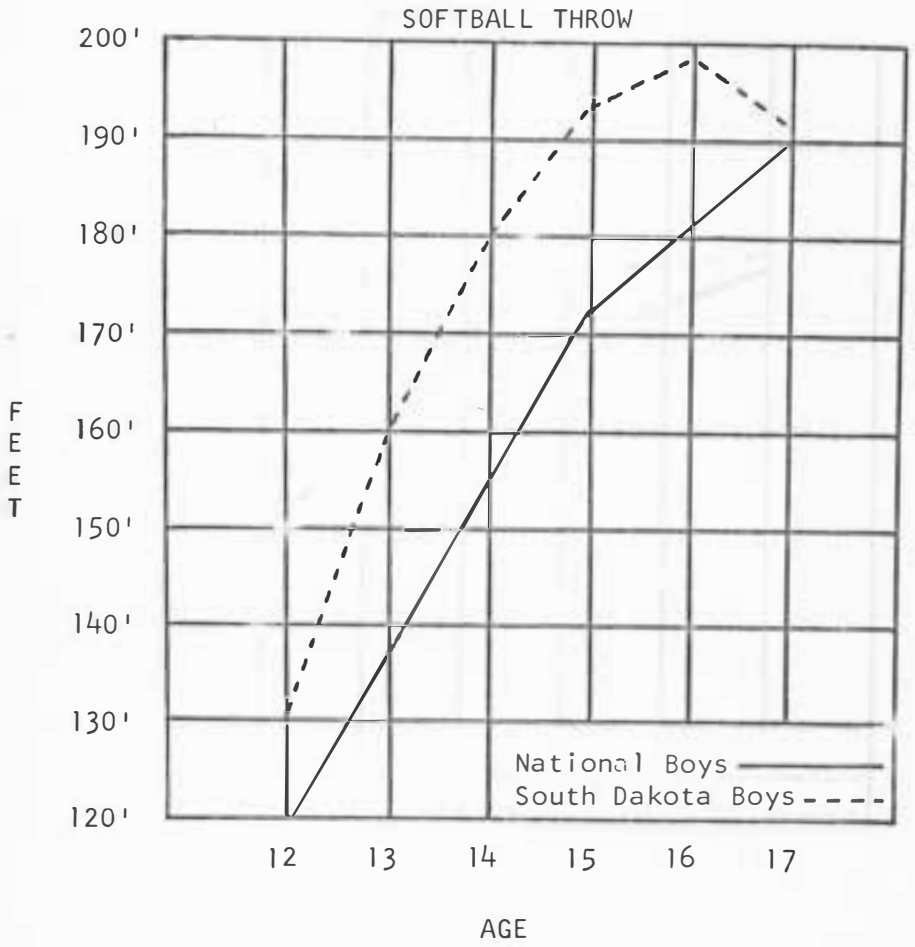

FIGURE 6

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, SOFTBALL THROW

Figure 6 shows that the medians in the softball throw for South Dakota boys is higher than the medians for national boys at every age level.

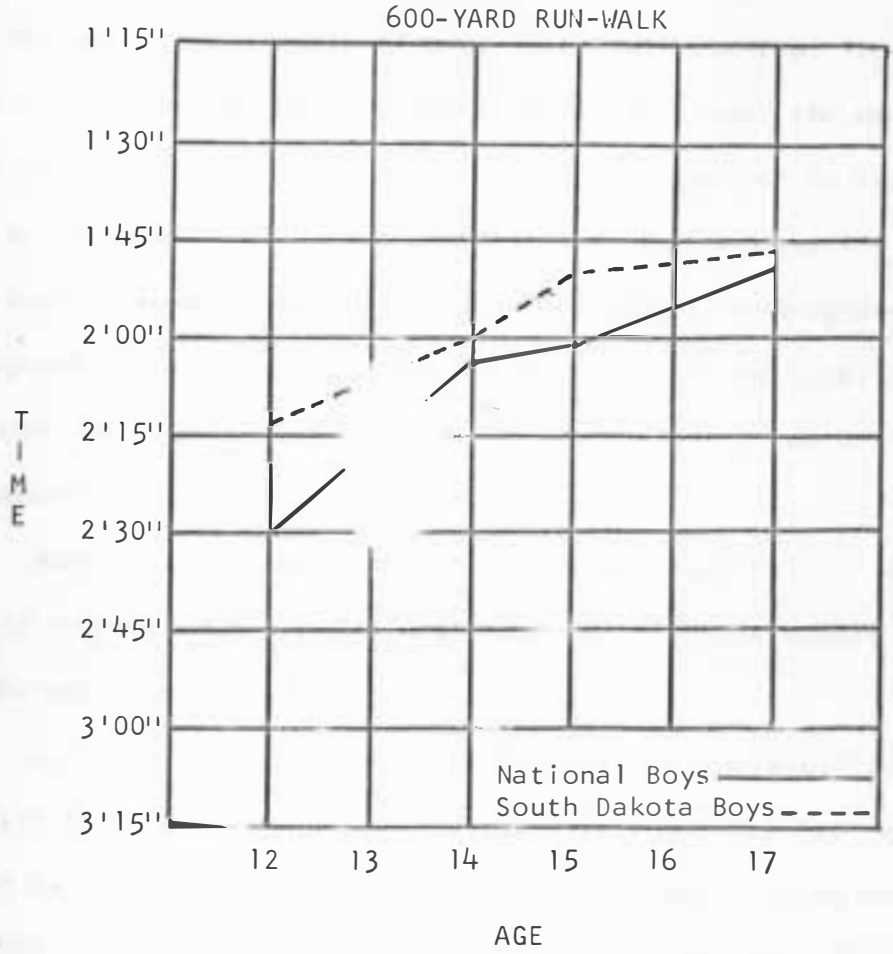

FIGURE 7

COMPARISON OF YOUTH FITNESS DATA BETWEEN NATIONAL BOYS AND SOUTH DAKOTA BOYS, 600-YARD RUN-WALK

Figure 7 shows that the medians in the 600-yard run-walk for South Dakota boys is slightly higher than the medians for national boys at every age level.

The medians for South Dakota boys at all age levels are higher than the medians for national boys on all items except the pull-up, the shuttle run, and the 50-yard dash. On these items, the medians are identical. The high physical fitness level attained by South Dakota boys on the AAHPER Youth Fitness Test does not necessarily indicate that such fitness is due to the physical education programs as conducted throughout the state. Such factors as rural occupational and variations in summer employment opportunities of more vigorous nature might have influenced the results.

Howlin found that the boys from four Sioux Falls elementary schools scored above the national mean on all items except pull-ups and the 600-yard run-walk.[10]

Lilevjen and Schlekeway reported that all classifications of the Watertown Junior High School boys were above the fiftieth percentile of the national norms in all test items.[11] These scores were higher than the scores achieved in this study in the sit-ups, the shuttle run, and the 600-yard run-walk. There was very little difference between the two sets of scores in the pull-up, the 50-yard dash, and the softball throw. The scores for junior high boys in this study were higher than the Watertown Junior High boys in only one item, the standing broad jump.

Since the data appearing in Figures 1 through 7 illustrate a

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[10] Ibid., p. 71.

[11] Lilevjen, op. cit., p 26.

difference between the national medians and the South Dakota medians, the null hypothesis was rejected.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of the study was to establish norms for the AAHPER Youth Fitness Test for South Dakota boys in grades seven through ten and to compare their scores with those of national boys.

One school was selected to represent each region or section of the South Dakota High School Activities' Association. The number selected from each school was in proportion to the school's enrollment.

The AAHPER Youth Fitness Test was administered to one thousand South Dakota boys in grades seven through ten. Norms were established by computing every fifth percentile. This was done according to age and the Nielson-Cozens Classification Index. Then the scores of South Dakota boys were compared with the scores of national boys, using age only. The medians of South Dakota boys were then compared to the medians of national boys on each test item.

FINDINGS

The medians for South Dakota boys at all age levels were higher than the medians for national boys on all items except the pull-up, the shuttle run, and the 50-yard dash. In these cases, the medians were equal.

II. CONCLUSION

Within the limitations of the study, the following conclusion was made:

1. South Dakota boys scored equal to, or well above the national AAHPER Youth Fitness Test medians on all test items.

RECOMMENDATIONS

The following are the investigator's recommendations for possible future study in the area of physical fitness testing of South Dakota youth:

1. That a similar study be undertaken to establish physical fitness norms for boys and girls in grades kindergarten through six.
2. That a similar study be conducted to establish physical fitness norms for college men and women in the eleven colleges and universities in South Dakota.
3. That a similar study be undertaken using the new shortened form of the AAHPER Youth Fitness Test.

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APPENDIXES

APPENDIX A

1200 SUBJECTS

Class "A"

Section	% each section is of its class	Students per section	Students per grade
1	10	60	15
2	8	48	12
3	23	140	35
4	11	68	17
5	11	68	17
6	8	48	12
7	20	120	30
8	8	48	12

Class "B"

Region	% each region is of its class	Students per region	Students per grade
1	10	60	15
2	12	72	18
3	10	60	15
4	14	84	21
5	15	92	23
6	14	84	21
7	11	68	17
8	13	80	20

APPENDIX B

SCHOOLS REPRESENTING CLASS "B" REGIONS

Region 1 Waubay

Region 2 Not represented

Region 3 Volga (Sioux Valley)

Region 4 Fort Pierre and Kimball

Region 5 Alexandria

Region 6 Not represented

Region 7 Springfield and Wagner

Region 8 Deadwood

SCHOOLS REPRESENTING CLASS "A" SECTIONS

Section 1 Milbank

Section 2 Brookings

Section 3 Sioux Falls (Lincoln and Axtell Park)

Section 4 Not represented

Section 5 Mitchell

Section 6 Vermillion

Section 7 Pierre and Hot Springs

Section 8 Sturgis

APPENDIX C

_____ I will participate in the study.

_____ I will not participate in the study.

_____ Name(s) of the person(s) in charge of administering the test.

_____ AAHPER Youth Fitness Test has already been administered.

_____ AAHPER Youth Fitness Test has not already been administered.

_____ Name of school.

SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA 57006

College of Arts and Science

PARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION
Research Office

Mr. John Doe, Principal
Jameston High School
Jameston, South Dakota

Dear Principal Doe:

A state-wide survey is being conducted to determine the status of the physical fitness of South Dakota boys and girls in grades seven through ten using the AAHPER Youth Fitness Test. Through the cooperation of the schools selected in the sampling, norms for the state will be established and compared to the national AAHPER norms.

Ninety-six boys and ninety-six girls in grades seven through ten from Jameston High School will be tested.

If the AAHPER Youth Fitness Test has already been administered this year to the students in grades seven through ten, the results may be used providing the test has been administered according to directions given in the AAHPER Youth Fitness Test Manual.

We would like to assure you that the information obtained is completely confidential in that no school will be individually identified with the results. If you agree to participate in this study, please forward this letter to the appropriate personnel. Another letter will follow with a test manual and instructions as to how to select your sample. Please send your reply by Wednesday, February 26, 1969.

Your cooperation in this study would be greatly appreciated.

Sincerely yours,

Judy Busch
Glenn Rasmussen
Graduate Students

Dear Principal

As State Director of Health, Physical Education and Recreation, I whole heartedly endorse the study on the status of Physical Fitness of South Dakota boys and girls in grades seven through ten being conducted by Judy Busch and Glenn Rasmussen of South Dakota State University.

This endeavor is a project of the state-wide Task Force endorsed by the Department of Public Instruction.

Your cooperation and concern relative to this study will be greatly appreciated. We are vitally concerned the South Dakota youth maintain the level of fitness necessary to normal growth and development.

As stated by Plato, "It is not the mind, it is not the body we are training; it is the man and we must not divide him into two parts. We should not fashion one without the other but make them draw together like two horses harnessed to a coach."

Respectfully yours,

RICHARD A. NANKIVEL
Specialist; Health,
Physical Education
and Recreation

RAN/ll

APPENDIX D

CITY_____

STUDENT'S NAME OR I.D. NUMBER_____

GRADE_____ DATE OF BIRTH_____

SEX_____ HEIGHT_____INCHES WEIGHT_____POUNDS

TEST ITEMS:

PULL-UPS_____NUMBER SIT-UPS_____NUMBER

SHUTTLE RUN_____SECONDS

STANDING BROAD JUMP_____FEET _____INCHES

50-YARD DASH_____SECONDS SOFTBALL THROW_____FEET

600-YARD RUN-WALK_____MINUTES _____SECONDS

SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA 57006

COLLEGE OF ARTS AND SCIENCE

ARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION

Research Office

Mr. John Doe, Instructor
Physical Education
Jameston High School
Jameston, South Dakota

Dear Mr. Doe:

I have received confirmation of your cooperation in my study.

I will only need the test data of 96 boys in grades 7-10 (equal number per grade). It is important that each student in the class has an equal chance of becoming a subject.

Since you have already administered the AAHPER Youth Fitness Test this year, you can do one of two things: you can send me all of the students' scores and I will select the sample, or you can select the sample by putting all of the students' names (or numbers) in a box and drawing the number of subjects required per class from the box.

Do not be alarmed if the students selected are either all above or all below average in ability; the use of these subjects selected by random sampling is essential to obtain a representative sample. Please do not select the subjects subjectively!

Regardless of whether you select the sample or whether we do, you still must fill out the data sheets on each student and return them as soon as possible. Once again your cooperation is greatly appreciated.

Sincerely yours,

Glenn Rasmussen
Graduate Student

SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA 57006

COLLEGE OF ARTS AND SCIENCE

PARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION

Research Office

Mr. John Doe, Instructor
Physical Education
Jameston High School
Jameston, South Dakota

Dear Mr. Doe:

A few weeks ago a letter was sent to your principal asking permission for cooperation from your school in a study. He consented and referred me to you for further cooperation in administering the test.

I will only need the test data of 96 boys in grades 7-10. It is important that each student in the class has an equal chance of becoming a subject, only those students with heart conditions should be ommitted. I suggest selecting the sample by putting all of the students' names (or numbers) in a box and pulling the number of names required from the box.

Do not be alarmed if the students selected are either all above or all below average in ability; the use of these subjects selected by random sampling is essential to obtain a representative sample. Please do not select the students subjectively.

The directions for administering the AAHPER Youth Fitness Test can be found in the enclosed manual. It is very important that the instructions for each test item be followed. Any minor changes will change the entire study.

Please fill out completely the enclosed data sheets and return them as soon as the testing has been completed.

Sincerely yours,

Glenn Rasmussen
Graduate Student

APPENDIX E

Mr. John Doe, Instructor
Physical Education
Jameston High School
Jameston, South Dakota

Dear Mr. Doe:

This is just a reminder to please hurry and send in the results of the AAHPER Youth Fitness Test sent.

Thank you.

Respectfully yours,

Glenn Rasmussen
Graduate Student

APPENDIX F

DIRECTIONS FOR ADMINISTERING THE AAHPER YOUTH FITNESS TEST*

The following is a description of each of the seven test items with a description of the necessary equipment needed for the test, the rules for the test item, and the method of scoring the test item:

I. PULL-UP (boys only)

Equipment: A metal or wooden bar approximately $1\frac{1}{2}$ inches in diameter is preferred. A doorway gym bar can be used, and if no regular equipment is available, a piece of pipe or even the rungs of a ladder can also serve the purpose.

Description: The bar should be high enough so that the pupil can hang with his arms and legs fully extended and his feet free of the floor. He should use the overhand grasp. After assuming the hanging position, the pupil raises his body by his arms until his chin can be placed over the bar and then lowers his body to a full hang as in the starting position. The exercise is repeated as many times as possible.

Rules: 1. Allow one trial unless it is obvious that the pupil has not had a fair chance.

2. The body must not swing during the execution of the movement. The pull must in no way be a snap movement. If the pupil starts swinging, check his swing by holding your extended arm across the front of the thighs.

3. The knees must not be raised and kicking of the legs is not permitted.

Scoring: Record the number of completed pull-ups to the nearest whole number.

II. SIT-UP

Equipment: Mat or floor.

Description: The pupil lies on his back, either on the floor or on a mat, with legs extended and feet about two feet apart. His

*The directions for the AAHPER Fitness Test are taken from the American Association for Health, Physical Education and Recreation Youth Fitness Test Manual, revised edition, 1965.

hands are placed on the back of the neck with the fingers interlaced. Elbows are held out. A partner holds the ankles down, the heels being in contact with the mat or floor at all times. The pupil sits up, turning the trunk to the left and touching the right elbow to the left knee, returns to starting position, then sits up turning the trunk to the right and touching the left elbow to the right knee. The exercise is repeated, alternating sides.

Rules: 1. The fingers must remain in contact behind the neck throughout the exercise.
2. The knees must be on the floor during the sit-up but may be slightly bent when touching elbow to knee.
3. The back should be rounded and the head and elbows brought forward when sitting up as a "curl" up.
4. When returning to starting position, elbows must be flat on the mat before sitting up again.

Scoring: One point is given for each complete movement of touching elbow to knee. No score should be counted if the fingertips do not maintain contact behind the head, if knees are bent when the pupil lies on his back or when he begins to sit up, or if the pupil pushes up off the floor from an elbow. The maximum number of sit-ups for girls is 50 and 100 for boys.

III. SHUTTLE RUN

Equipment: Two blocks of wood, 2"x2"x4", and stop watch. Pupils should wear sneakers or run barefooted.

Description: Two parallel lines are marked on the floor thirty feet apart. The width of a regulation volleyball court serves as a suitable area. Place the blocks of wood behind one of the lines as indicated in the manual. The pupil starts behind the other line. On the signal "Ready? Go!" the pupil runs to the blocks, picks one up, runs back to the starting line, and places the block behind the line; he then runs back and picks up the second block, which he carries back across the starting line. If the scorer has two stopwatches or one with a split-second timer, it is preferable to have two pupils running at the same time. To eliminate the necessity of returning the blocks after each race, start the races alternately, first from behind one line and then from behind the other.

Rules: Allow two trials with some rest between.

Scoring: Record the time of the better of the two trials to the nearest tenth of a second.

IV. STANDING BROAD JUMP

Equipment: Mat, floor, or outdoor jumping pit, and tape measure.

Description: Pupil stands as instructed with the feet several inches apart and the toes just behind the take-off line. Preparatory to jumping, the pupil swings with the arm backward and bends the knees. The jump is accomplished by simultaneously extending the knees and swinging forward the arms.

Rules: 1. Allow three trials.
2. Measure from the take-off line to the heel or other part of the body that touches the floor nearest the take-off line.
3. When the test is given indoors, it is convenient to tape the tape measure to the floor and have the pupils jump along the tape. The scorer stands to the side and observes the mark to the nearest inch.

Scoring: Record the best of the three trials in feet and inches to the nearest inch.

V. 50-YARD DASH

Equipment: Two stopwatches or one with a split-second timer.

Description: It is preferable to administer this test to two pupils at a time. Have both take positions behind the starting line. The starter will use the commands "Are you ready?" and "Go!" The latter will be accompanied by a downward sweep of the starter's arm to give a visual signal to the timer, who stands at the finish line.

Rules: The score is the amount of time between the starter's signal and the instant the pupil crosses the finish line.

Scoring: Record in seconds to the nearest tenth of a second.

VI. SOFTBALL THROW FOR DISTANCE

Equipment: 12" softball, small metal or wooden stakes, and tape measure.

Description: A football field marked in conventional fashion (5-yard intervals) makes an ideal area for this test. If this is not available, it is suggested that lines be drawn parallel

to the restraining line, five yards apart. The pupil throws the ball while remaining within two parallel lines, six feet apart. Mark the point of landing with one of the small stakes. If his second or third throw is farther, move the stake accordingly so that, after three throws, the stake is at the point of the pupil's best throw. It was found expedient to have the pupil jog out to his stake and stand there; and then, after five throws (best throws marked) by five pupils, measuring the best throws of the five pupils that have thrown each three times. By having the students stand by their stake the chance of recording the wrong score is reduced.

Rules: 1. Only an overhand throw may be used.
2. Three throws are allowed.
3. The distance recorded is the distance measured at right angles from the point of land to the restraining line.

Scoring: Record the best of the three trials to the nearest foot.

VII. 600-YARD RUN-WALK

Equipment: Track or area marked accordingly so that 600 yards are known, and stopwatch.

Description: Pupil uses a standing start. At the signal "Ready? Go!" the pupil starts running the 600-yard distance. The running may be interspersed with walking. It is possible to have a dozen pupils run at one time by having the pupils pair off before the start of the event. Then each pupil listens for and remembers his partner's time as the latter crosses the finish. The timer merely calls out the times as the pupils cross the finish.

Rules: Walking is permitted, but the object is to cover the distance in the shortest time.

Scoring: Record in minutes and seconds.

APPENDIX G

Percentile scores for boys in grades seven through ten are given in Tables I through XXIII.

TABLE I

PULL-UP FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Number of Pull-Ups

Percentile	Age 12	13	14	15	16	17	Percentile
100th	15	20	24	19	21	16	100th
95th	12	13	24	15	18	15	95th
90th	9	10	24	13	15	15	90th
85th	8	9	24	12	13	13	85th
80th	7	8	24	11	12	13	80th
75th	6	7	15	10	11	12	75th
70th	5	6	11	9	10	12	70th
65th	4	6	9	8	9	11	65th
60th	4	5	8	8	9	10	60th
55th	3	4	7	7	8	9	55th
50th	3	3	6	6	7	8	50th
45th	2	3	5	5	7	8	45th
40th	2	3	5	5	6	8	40th
35th	1	2	4	4	6	6	35th
30th	1	1	3	4	5	6	30th
25th	1	1	2	3	5	5	25th
20th	0	0	2	2	4	5	20th
15th	0	0	1	2	3	4	15th
10th	0	0	0	1	2	4	10th
5th	0	0	0	0	1	4	5th
0	0	0	0	0	0	0	0

TABLE II

SIT-UP FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Number of Sit-Ups

Percentile	Age 12	13	14	15	16	17	Percentile
100th	100	100	100	100	100	100	100th
95th	100	100	100	100	100	100	95th
90th	100	100	100	100	100	100	90th
85th	100	100	100	100	100	100	85th
80th	100	100	100	100	100	100	80th
75th	100	100	100	100	100	100	75th
70th	86	100	100	100	100	100	70th
65th	86	95	100	100	100	100	65th
60th	76	92	100	100	100	85	60th
55th	71	76	98	100	100	85	55th
50th	65	71	87	100	100	85	50th
45th	61	65	75	100	97	85	45th
40th	58	60	70	100	97	85	40th
35th	55	56	63	100	85	85	35th
30th	41	52	56	98	76	63	30th
25th	39	49	50	98	70	63	25th
20th	30	43	48	83	61	51	20th
15th	26	40	44	79	52	40	15th
10th	21	32	37	70	45	12	10th
5th	13	21	26	30	35	12	5th
0	0	0	0	0	0	0	0

TABLE III

SHUTTLE RUN FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Seconds and Tenths

Percentile	Age 12	13	14	15	16	17	Percentile
100th	9.3	8.9	7.0	8.0	8.4	8.6	100th
95th	9.9	9.6	9.0	9.0	8.9	8.8	95th
90th	10.0	9.8	9.4	9.2	9.1	9.0	90th
85th	10.1	10.0	9.5	9.3	9.2	9.0	85th
80th	10.2	10.0	9.6	9.4	9.3	9.1	80th
75th	10.4	10.1	9.8	9.5	9.4	9.1	75th
70th	10.5	10.2	9.9	9.6	9.5	9.2	70th
65th	10.6	10.3	10.0	9.7	9.6	9.3	65th
60th	10.6	10.4	10.1	9.8	9.7	9.6	60th
55th	10.7	10.5	10.2	9.9	9.8	9.7	55th
50th	10.8	10.6	10.3	10.0	9.8	9.8	50th
45th	10.9	10.8	10.4	10.1	9.9	9.8	45th
40th	11.1	10.9	10.5	10.2	10.0	9.9	40th
35th	11.2	11.0	10.6	10.3	10.1	9.9	35th
30th	11.3	11.2	10.7	10.4	10.2	10.0	30th
25th	11.5	11.3	11.0	10.6	10.4	10.0	25th
20th	11.6	11.5	11.1	10.8	10.6	10.4	20th
15th	11.8	11.6	11.3	11.0	10.8	10.4	15th
10th	11.9	11.9	11.6	11.4	11.0	10.5	10th
5th	13.0	12.1	12.0	12.2	11.6	10.7	5th
0	14.0	14.7	18.6	14.6	13.0	10.8	0

TABLE IV

STANDING BROAD JUMP FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Feet and Inches

Percentile	Age 12	13	14	15	16	17	Percentile
100th	8'2"	10'7"	9'6"	10'4"	10'4"	9'6"	100th
95th	8'0"	8'3"	8'5"	9'3"	9'5"	9'5"	95th
90th	7'6"	7'5"	8'2"	9'1"	9'3"	9'5"	90th
85th	7'1"	7'4"	8'1"	8'9"	9'1"	9'4"	85th
80th	7'0"	7'3"	7'8"	8'6"	8'9"	9'4"	80th
75th	6'9"	7'2"	7'6"	8'4"	8'8"	9'4"	75th
70th	6'8"	7'1"	7'4"	8'3"	8'6"	9'1"	70th
65th	6'7"	7'0"	7'3"	8'1"	8'5"	9'1"	65th
60th	6'6"	6'9"	7'2"	8'0"	8'3"	9'0"	60th
55th	6'5"	6'8"	7'1"	7'9"	8'2"	9'0"	55th
50th	6'4"	6'7"	7'0"	7'7"	8'1"	8'9"	50th
45th	6'3"	6'5"	6'9"	7'6"	8'0"	8'8"	45th
40th	6'2"	6'3"	6'8"	7'4"	7'9"	8'8"	40th
35th	6'1"	6'2"	6'6"	7'3"	7'7"	8'6"	35th
30th	6'0"	6'0"	6'5"	7'1"	7'5"	8'5"	30th
25th	5'7"	5'9"	6'4"	7'0"	7'3"	8'4"	25th
20th	5'6"	5'8"	6'2"	6'8"	7'2"	8'0"	20th
15th	5'5"	5'5"	6'0"	6'6"	6'9"	7'8"	15th
10th	5'4"	5'4"	5'6"	6'3"	6'6"	7'6"	10th
5th	4'7"	5'2"	5'3"	6'0"	6'4"	7'4"	5th
0	3'6"	3'6"	4'5"	4'4"	5'5"	7'4"	0

TABLE V

50-YARD DASH FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Seconds and Tenths

Percentile	Age 12	13	14	15	16	17	Percentile
100th	6.5	6.0	5.8	5.4	5.9	6.1	100th
95th	7.1	6.8	6.5	6.2	6.1	6.1	95th
90th	7.1	7.0	6.7	6.3	6.3	6.1	90th
85th	7.3	7.1	6.8	6.4	6.4	6.2	85th
80th	7.4	7.2	6.9	6.5	6.4	6.2	80th
75th	7.5	7.3	7.0	6.6	6.5	6.2	75th
70th	7.5	7.4	7.1	6.7	6.5	6.2	70th
65th	7.6	7.5	7.2	6.8	6.6	6.4	65th
60th	7.7	7.5	7.3	6.8	6.7	6.4	60th
55th	7.8	7.6	7.4	6.9	6.7	6.5	55th
50th	7.9	7.7	7.4	7.0	6.8	6.5	50th
45th	8.0	7.8	7.5	7.0	6.8	6.7	45th
40th	8.1	7.8	7.6	7.1	6.9	6.7	40th
35th	8.2	7.9	7.6	7.2	7.0	6.7	35th
30th	8.4	8.0	7.8	7.3	7.0	6.8	30th
25th	8.4	8.2	7.9	7.5	7.1	6.8	25th
20th	8.5	8.3	8.0	7.6	7.2	7.0	20th
15th	8.7	8.4	8.1	7.8	7.3	7.1	15th
10th	8.7	8.6	8.3	8.0	7.6	7.1	10th
5th	9.5	8.9	8.6	8.2	7.9	7.5	5th
0	0	0	0	0	0	0	0

TABLE VI

SOFTBALL THROW FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Feet

Percentile	Age 12	13	14	15	16	17	Percentile
100th	187	202	236	241	285	246	100th
95th	175	200	216	214	225	214	95th
90th	168	189	211	206	213	213	90th
85th	162	187	209	205	203	212	85th
80th	153	185	207	204	201	210	80th
75th	144	182	206	201	200	209	75th
70th	138	180	205	199	199	205	70th
65th	137	178	200	198	199	201	65th
60th	135	172	198	197	199	197	60th
55th	132	162	194	195	198	196	55th
50th	130	160	180	192	198	193	50th
45th	127	156	172	187	186	190	45th
40th	125	142	170	185	183	188	40th
35th	123	137	164	181	181	184	35th
30th	122	130	161	173	178	177	30th
25th	118	123	157	170	172	176	25th
20th	113	120	150	153	168	175	20th
15th	105	112	142	140	162	172	15th
10th	90	99	120	138	140	170	10th
5th	66	85	110	125	120	168	5th
0	39	60	71	81	80	165	0

TABLE VII

600-YARD RUN-WALK FOR SOUTH DAKOTA BOYS

Percentile Scores Based on Age / Test Scores in Minutes and Seconds

Percentile	Age 12	13	14	15	16	17	Percentile
100th	1'47"	1'41"	1'31"	1'29"	1'17"	1'31"	100th
95th	1'51"	1'47"	1'33"	1'34"	1'34"	1'35"	95th
90th	1'54"	1'50"	1'43"	1'38"	1'36"	1'36"	90th
85th	1'57"	1'53"	1'45"	1'41"	1'39"	1'37"	85th
80th	2' 1"	1'56"	1'47"	1'43"	1'41"	1'37"	80th
75th	2' 5"	1'59"	1'50"	1'44"	1'42"	1'37"	75th
70th	2' 6"	2' 0"	1'52"	1'47"	1'44"	1'39"	70th
65th	2' 8"	2' 2"	1'55"	1'49"	1'46"	1'39"	65th
60th	2' 9"	2' 4"	1'57"	1'51"	1'48"	1'40"	60th
55th	2'11"	2' 6"	1'59"	1'53"	1'50"	1'42"	55th
50th	2'12"	2' 8"	2' 0"	1'54"	1'53"	1'47"	50th
45th	2'15"	2'11"	2' 3"	1'56"	1'53"	1'48"	45th
40th	2'17"	2'13"	2' 5"	1'58"	1'56"	1'48"	40th
35th	2'20"	2'14"	2' 6"	1'59"	1'58"	1'49"	35th
30th	2'25"	2'16"	2' 9"	2' 1"	1'59"	1'50"	30th
25th	2'28"	2'18"	2'11"	2' 3"	2' 1"	1'50"	25th
20th	2'33"	2'21"	2'14"	2' 5"	2' 3"	1'52"	20th
15th	2'36"	2'27"	2'16"	2'11"	2' 7"	1'57"	15th
10th	2'49"	2'32"	2'22"	2'17"	2'10"	2' 0"	10th
5th	3' 1"	2'46"	2'30"	2'22"	2'15"	2'55"	5th
0	0	0	0	0	0	0	0

TABLE VIII

CLASSIFICATION INDEX FOR BOYS
GRADES 5, 6, 7, 8, 9

Exponent	Age (months)	Height (inches)	Weight (pounds)	Sum of exponents	Class
1	120-125	50-51	60-65	0-9	A
2	126-131	52-53	66-70	10-14	B
3	132-137		71-75	15-19	C
4	138-143	54-55	76-80	20-24	D
5	144-149		81-85	25-29	E
6	150-155	56-57	86-90	30-34	F
7	156-161		91-95	35-38	G
8	162-167	58-59	96-100	30-above	H
9	168-173		101-105		
10	174-179	60-61	106-110		
11	180-185		111-115		
12	186-191	62-63	116-120		
13	192-197		121-125		
14	198-203	64-65	126-130		
15	204-209	66-67	131-133		
16	210-215	68	134-136		
17	216	69	137		

TABLE IX

CLASSIFICATION INDEX FOR BOYS
GRADES 10, 11, 12

Exponent	Age (months)	Height (inches)	Weight (pounds)	Sum of exponents	Class
9			53-59	88 and over	A
10			60-65	83-87	B
11			66-71	82 and below	C
12			72-78		
13			79-84		
14			85-90		
15			91-96		
16			97-103		
17			104-109		
18			110-115		
19			116-121		
20			122-128		
21			129-134		
22		0-47	135-140		
23		47.5-49	141-146		
24		49.5-51.5	147-153		
25		52-53.5	154-159		
26		54-55.5	160-165		
27	159-164	56-57.5	166-171		
28	165-170	58-59.5	172-178		
29	171-176	60-62	179-184		
30	177-182	62.5-64	185-190		
31	183-188	64.5-66	191		
32	189-194	66.5-68			
33	195-200	68.5-70.5			
34	201-206	71-72.5			
35	207-212	73-74.5			
36	213-218	75			
37	219-224				
38	225-230				

TABLE X

PULL-UP FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Number of Pull-Ups

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	15	13	22	23	18	21	24	100th
95th	14	11	13	21	17	20	23	95th
90th	11	10	9	16	13	19	15	90th
85th	10	10	8	11	10	13	12	85th
80th	10	9	7	9	9	11	11	80th
75th	8	8	6	8	8	10	10	75th
70th	8	8	5	7	7	8	9	70th
65th	8	7	5	6	6	7	8	65th
60th	5	7	4	5	6	6	8	60th
55th	5	6	4	4	5	5	7	55th
50th	5	6	3	4	4	5	6	50th
45th	3	5	3	3	4	4	5	45th
40th	3	5	2	2	3	4	5	40th
35th	3	4	2	2	2	3	4	35th
30th	3	4	1	2	2	3	3	30th
25th	2	3	1	1	1	2	3	25th
20th	2	3	0	1	1	2	2	20th
15th	2	2	0	0	0	1	2	15th
10th	2	1	0	0	0	1	1	10th
5th	0	0	0	0	0	0	0	5th
0	0	0	0	0	0	0	0	0

TABLE XI

SIT-UP FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Number of Sit-Ups

	Classification Index							
Percentile	B	C	D	E	F	G	H	Percentile
100th	100	100	100	100	100	100	100	100th
95th	100	100	100	100	100	100	100	95th
90th	100	100	100	100	100	100	100	90th
85th	83	95	100	100	100	100	100	85th
80th	83	95	100	100	100	100	100	80th
75th	83	95	92	100	92	100	98	75th
70th	77	71	92	100	92	95	98	70th
65th	77	65	92	100	92	95	98	65th
60th	56	61	85	100	92	95	98	60th
55th	56	60	73	100	92	95	98	55th
50th	56	60	67	90	87	95	98	50th
45th	55	50	61	82	71	95	85	45th
40th	55	45	59	72	63	80	79	40th
35th	50	44	55	66	60	75	73	35th
30th	50	43	51	57	52	70	64	30th
25th	50	40	47	54	50	60	58	25th
20th	34	39	43	48	47	50	50	20th
15th	34	35	37	42	40	46	49	15th
10th	34	23	32	37	27	35	43	10th
5th	0	14	24	24	19	25	32	5th
0	0	0	0	0	0	0	0	0

TABLE XII

SHUTTLE RUN FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Seconds and Tenths

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	9.5	9.5	9.3	7.0	7.2	8.9	8.0	100th
95th	9.5	9.6	9.3	9.5	9.5	9.4	9.1	95th
90th	9.9	9.8	9.3	9.7	9.7	9.5	9.3	90th
85th	9.9	9.9	9.9	9.9	9.8	9.6	9.4	85th
80th	9.9	10.0	10.0	10.0	10.0	9.8	9.5	80th
75th	10.1	10.2	10.1	10.1	10.1	9.9	9.6	75th
70th	10.1	10.3	10.2	10.2	10.2	10.0	9.7	70th
65th	10.1	10.4	10.4	10.3	10.3	10.0	9.8	65th
60th	10.3	10.5	10.5	10.4	10.5	10.1	9.9	60th
55th	10.3	10.7	10.5	10.5	10.6	10.3	10.0	55th
50th	10.3	10.9	10.6	10.6	10.7	10.4	10.1	50th
45th	11.0	10.9	10.8	10.7	10.9	10.5	10.1	45th
40th	11.0	11.1	10.8	10.8	11.0	10.6	10.2	40th
35th	11.0	11.2	10.9	11.0	11.1	10.7	10.3	35th
30th	11.0	11.4	11.0	11.1	11.2	10.8	10.5	30th
25th	11.0	11.5	11.3	11.3	11.3	11.0	10.6	25th
20th	11.4	11.7	11.5	11.5	11.4	11.1	10.7	20th
15th	11.4	11.9	11.6	11.7	11.5	11.4	10.9	15th
10th	11.4	12.1	11.9	11.9	11.6	11.7	11.1	10th
5th	0	12.1	12.3	12.5	12.6	12.0	11.5	5th
0	0	0	0	0	0	0	0	0

TABLE XIII

STANDING BROAD JUMP FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Feet and Inches

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	6'6"	8'0"	8'4"	8'4"	8'8"	10'3"	10'7"	100th
95th	6'5"	7'6"	7'8"	7'9"	8'3"	9'6"	9'1"	95th
90th	6'4"	7'2"	7'5"	7'8"	7'9"	9'1"	8'8"	90th
85th	6'4"	7'0"	7'3"	7'1"	7'7"	8'5"	8'5"	85th
80th	6'4"	6'7"	7'0"	7'1"	7'5"	8'3"	8'4"	80th
75th	6'3"	6'7"	6'9"	6'9"	7'4"	8'1"	8'1"	75th
70th	6'3"	6'6"	6'8"	6'8"	7'3"	7'7"	8'0"	70th
65th	6'3"	6'6"	6'7"	6'8"	7'2"	7'6"	7'9"	65th
60th	6'2"	6'5"	6'5"	6'7"	7'1"	7'4"	7'8"	60th
55th	6'2"	6'5"	6'4"	6'6"	7'0"	7'3"	7'7"	55th
50th	6'2"	6'3"	6'3"	6'5"	6'9"	7'2"	7'5"	50th
45th	6'2"	6'2"	6'2"	6'4"	6'7"	7'1"	7'3"	45th
40th	6'2"	6'2"	6'2"	6'4"	6'6"	7'0"	7'2"	40th
35th	6'0"	6'1"	6'1"	6'3"	6'5"	6'8"	7'1"	35th
30th	6'0"	6'0"	5'9"	6'2"	6'4"	6'7"	7'0"	30th
25th	6'0"	5'8"	5'8"	6'1"	6'2"	6'7"	6'9"	25th
20th	4'8"	5'7"	5'7"	6'0"	6'0"	6'4"	6'7"	20th
15th	4'8"	5'6"	5'6"	5'9"	5'9"	6'2"	6'4"	15th
10th	4'8"	5'4"	5'4"	5'4"	5'6"	5'9"	6'1"	10th
5th	4'8"	5'0"	4'7"	5'1"	5'4"	5'3"	5'7"	5th
0	4'8"	4'8"	3'6"	4'4"	4'5"	3'6"	4'4"	0

TABLE XIV

50-YARD DASH FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Seconds and Tenths

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	7.4	6.3	6.5	6.5	6.5	6.1	5.4	100th
95th	7.4	7.0	7.1	7.0	6.7	6.5	6.2	95th
90th	7.4	7.1	7.2	7.1	7.0	6.8	6.4	90th
85th	7.5	7.2	7.3	7.2	7.1	6.9	6.5	85th
80th	7.5	7.3	7.4	7.3	7.1	6.9	6.6	80th
75th	7.5	7.4	7.5	7.4	7.2	7.0	6.7	75th
70th	8.0	7.5	7.6	7.5	7.3	7.1	6.8	70th
65th	8.0	7.6	7.7	7.5	7.4	7.2	6.8	65th
60th	8.0	7.7	7.7	7.6	7.5	7.3	6.9	60th
55th	8.0	7.7	7.8	7.6	7.5	7.4	7.0	55th
50th	8.4	7.8	7.9	7.7	7.6	7.4	7.0	50th
45th	8.4	7.9	8.0	7.8	7.7	7.5	7.1	45th
40th	8.4	7.9	8.1	7.8	7.8	7.6	7.2	40th
35th	8.4	8.0	8.2	7.9	7.9	7.7	7.2	35th
30th	8.5	8.0	8.4	8.0	8.0	7.8	7.3	30th
25th	8.5	8.1	8.4	8.1	8.1	7.8	7.5	25th
20th	8.5	8.2	8.5	8.2	8.2	7.9	7.7	20th
15th	8.7	8.3	8.5	8.4	8.4	8.1	7.9	15th
10th	8.7	8.9	8.7	8.5	8.6	8.2	8.1	10th
5th	8.7	10.6	9.0	8.7	8.9	8.5	8.5	5th
0	0	0	0	0	0	0	0	0

TABLE XV

SOFTBALL THROW FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Feet

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	174	190	230	240	232	246	250	100th
95th	164	160	172	174	180	200	225	95th
90th	162	152	153	163	179	193	200	90th
85th	150	148	150	162	178	190	200	85th
80th	145	145	150	160	172	188	198	80th
75th	140	133	145	151	170	181	193	75th
70th	130	130	138	148	168	k75	191	70th
65th	125	128	136	145	165	168	190	65th
60th	115	125	132	140	163	164	188	60th
55th	112	120	128	138	160	162	182	55th
50th	110	114	126	137	159	158	179	50th
45th	105	112	124	132	155	149	175	45th
40th	101	109	119	129	152	147	173	40th
35th	97	107	117	126	150	143	162	35th
30th	95	103	114	124	143	138	158	30th
25th	93	97	111	119	138	135	147	25th
20th	91	95	103	115	131	131	143	20th
15th	89	93	101	110	128	128	129	15th
10th	85	89	95	96	111	123	125	10th
5th	78	87	91	88	98	116	111	5th
0	25	50	64	53	41	32	51	0

TABLE XVI

600-YARD RUN-WALK FOR SOUTH DAKOTA JUNIOR HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index / Test Scores in Minutes and Seconds

Percentile	Classification Index							Percentile
	B	C	D	E	F	G	H	
100th	1'59"	1'48"	1'50"	1'42"	1'37"	1'35"	1'33"	100th
95th	1'59"	1'53"	1'53"	1'49"	1'42"	1'41"	1'35"	95th
90th	2' 0"	1'56"	1'57"	1'53"	1'48"	1'44"	1'39"	90th
85th	2' 0"	2' 0"	1'59"	1'54"	1'50"	1'46"	1'42"	85th
80th	2' 0"	2' 2"	2' 0"	1'58"	1'52"	1'48"	1'44"	80th
75th	2' 4"	2' 3"	2' 3"	2' 0"	1'53"	1'50"	1'45"	75th
70th	2' 4"	2' 5"	2' 5"	2' 2"	1'56"	1'52"	1'47"	70th
65th	2' 4"	2' 6"	2' 7"	2' 4"	1'58"	1'54"	1'49"	65th
60th	2' 8"	2' 7"	2' 9"	2' 5"	2' 0"	1'55"	1'52"	60th
55th	2' 8"	2' 8"	2'12"	2' 6"	2' 2"	1'57"	1'54"	55th
50th	2' 8"	2' 8"	2'13"	2' 8"	2' 3"	1'58"	1'56"	50th
45th	2'11"	2'10"	2'15"	2'10"	2' 4"	1'59"	1'57"	45th
40th	2'11"	2'12"	2'16"	2'12"	2' 7"	2' 2"	1'59"	40th
35th	2'11"	2'13"	2'17"	2'13"	2'10"	2' 4"	2' 1"	35th
30th	2'12"	2'15"	2'18"	2'14"	2'13"	2' 8"	2' 4"	30th
25th	2'12"	2'15"	2'21"	2'16"	2'15"	2'10"	2' 6"	25th
20th	2'12"	2'24"	2'24"	2'20"	2'17"	2'15"	2'11"	20th
15th	2'12"	2'24"	2'26"	2'23"	2'21"	2'19"	2'15"	15th
10th	2'12"	2'30"	2'31"	2'30"	2'26"	2'30"	2'21"	10th
5th	2'12"	2'47"	2'34"	2'38"	2'41"	2'50"	2'31"	5th
0	2'12"	3' 1"	3' 4"	3'32"	4' 5"	3'13"	3' 2"	0

TABLE XVII

PULL-UP FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Number of Pull-Ups

Percentile	Classification Index			Percentile
	C	B	A	
100th	24	34	20	100th
95th	18	16	16	95th
90th	15	15	15	90th
85th	13	14	14	85th
80th	12	12	13	80th
75th	10	12	11	75th
70th	9	11	11	70th
65th	9	10	10	65th
60th	8	10	9	60th
55th	7	9	9	55th
50th	7	9	8	50th
45th	6	8	8	45th
40th	5	8	7	40th
35th	5	7	7	35th
30th	4	7	6	30th
25th	3	6	6	25th
20th	3	6	5	20th
15th	2	5	4	15th
10th	1	4	4	10th
5th	0	3	3	5th
0	0	0	0	0

TABLE XVIII

SIT-UP FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Number of Sit-Ups

Percentile	Classification Index			Percentile
	C	B	A	
100th	100	100	100	100th
95th	100	100	100	95th
90th	100	100	100	90th
85th	100	100	100	85th
80th	100	100	100	80th
75th	100	100	100	75th
70th	100	100	97	70th
65th	100	90	97	65th
60th	100	90	97	60th
55th	83	90	97	55th
50th	83	90	97	50th
45th	83	90	97	45th
40th	83	90	97	40th
35th	83	89	97	35th
30th	83	82	83	30th
25th	82	75	76	25th
20th	78	63	68	20th
15th	75	60	54	15th
10th	50	45	45	10th
5th	22	33	35	5th
0	0	0	0	0

TABLE XIX

SHUTTLE RUN FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Seconds and Tenths

Percentile	Classification Index			Percentile
	C	B	A	
100th	8.7	8.2	8.5	100th
95th	9.1	8.8	9.0	95th
90th	9.2	9.0	9.1	90th
85th	9.3	9.1	9.2	85th
80th	9.4	9.2	9.4	80th
75th	9.5	9.3	9.5	75th
70th	9.5	9.4	9.6	70th
65th	9.6	9.4	9.7	65th
60th	9.7	9.5	9.7	60th
55th	9.7	9.6	9.8	55th
50th	9.8	9.7	9.9	50th
45th	9.9	9.8	10.0	45th
40th	9.9	9.9	10.0	40th
35th	10.1	10.0	10.1	35th
30th	10.2	10.0	10.3	30th
25th	10.6	10.1	10.5	25th
20th	10.6	10.2	10.6	20th
15th	10.9	10.5	10.7	15th
10th	11.1	10.8	11.0	10th
5th	12.4	11.2	11.7	5th
0	0	0	0	0

TABLE XX

STANDING BROAD JUMP FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Feet and Inches

Percentile	Classification Index			Percentile
	C	B	A	
100th	10'2"	10'4"	9'6"	100th
95th	9'6"	9'4"	9'1"	95th
90th	9'4"	9'1"	9'0"	90th
85th	9'2"	9'1"	8'6"	85th
80th	9'1"	9'0"	8'4"	80th
75th	8'9"	8'9"	8'2"	75th
70th	8'8"	8'8"	8'2"	70th
65th	8'7"	8'7"	8'1"	65th
60th	8'5"	8'6"	8'0"	60th
55th	8'4"	8'5"	7'9"	55th
50th	8'3"	8'4"	7'7"	50th
45th	8'1"	8'3"	7'6"	45th
40th	8'0"	8'1"	7'3"	40th
35th	7'8"	8'0"	7'2"	35th
30th	7'7"	7'9"	7'1"	30th
25th	7'5"	7'7"	6'8"	25th
20th	7'4"	7'4"	6'6"	20th
15th	7'2"	7'3"	6'5"	15th
10th	7'0"	7'1"	6'0"	10th
5th	6'4"	6'7"	5'6"	5th
0	5'5"	5'4"	5'5"	0

TABLE XXI

50-YARD DASH FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Seconds and Tenths

Percentile	Classification Index			Percentile
	C	B	A	
100th	6.2	5.9	5.8	100th
95th	6.3	6.2	6.1	95th
90th	6.4	6.2	6.2	90th
85th	6.4	6.2	6.3	85th
80th	6.6	6.3	6.4	80th
75th	6.7	6.3	6.5	75th
70th	6.7	6.4	6.6	70th
65th	6.8	6.4	6.6	65th
60th	7.0	6.5	6.6	60th
55th	7.0	6.5	6.7	55th
50th	7.1	6.6	6.8	50th
45th	7.2	6.6	6.8	45th
40th	7.2	6.7	6.9	40th
35th	7.2	6.8	7.0	35th
30th	7.3	6.9	7.0	30th
25th	7.4	6.9	7.1	25th
20th	7.5	7.0	7.2	20th
15th	7.8	7.1	7.6	15th
10th	7.9	7.4	7.7	10th
5th	8.0	7.9	8.2	5th
0	0	0	0	0

TABLE XXII

SOFTBALL THROW FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Feet

Percentile	Classification Index			Percentile
	C	B	A	
100th	250	265	286	100th
95th	225	250	263	95th
90th	200	210	241	90th
85th	200	210	238	85th
80th	193	207	210	80th
75th	190	203	207	75th
70th	188	200	205	70th
65th	185	199	203	65th
60th	178	180	180	60th
55th	172	173	198	55th
50th	170	171	193	50th
45th	165	169	188	45th
40th	161	165	175	40th
35th	150	155	171	35th
30th	149	148	170	30th
25th	143	145	166	25th
20th	141	142	158	20th
15th	132	128	142	15th
10th	126	109	141	10th
5th	110	107	139	5th
0	62	58	42	0

TABLE XXIII

600-YARD RUN-WALK FOR SOUTH DAKOTA HIGH SCHOOL BOYS

Percentile Scores Based on Classification Index
Test Scores in Minutes and Seconds

Percentile	Classification Index			Percentile
	C	B	A	
100th	1'17"	1'24"	1'34"	100th
95th	1'31"	1'36"	1'35"	95th
90th	1'34"	1'37"	1'35"	90th
85th	1'36"	1'40"	1'36"	85th
80th	1'38"	1'40"	1'39"	80th
75th	1'40"	1'41"	1'42"	75th
70th	1'42"	1'43"	1'43"	70th
65th	1'45"	1'44"	1'47"	65th
60th	1'46"	1'45"	1'52"	60th
55th	1'49"	1'47"	1'52"	55th
50th	1'52"	1'48"	1'54"	50th
45th	1'53"	1'49"	1'57"	45th
40th	1'57"	1'52"	1'58"	40th
35th	1'59"	1'53"	1'59"	35th
30th	2' 0"	1'55"	2' 0"	30th
25th	2' 2"	1'57"	2' 0"	25th
20th	2' 3"	1'59"	2'11"	20th
15th	2'10"	2' 2"	2'12"	15th
10th	2'13"	2' 5"	2'17"	10th
5th	2'25"	2'10"	2'17"	5th
0	2'55"	2'29"	2'20"	0